GLOSSARY

Aerodynamic diameter—a term used to describe particles with common aerodynamic properties, which avoids the complications associated with varying particle sizes, shapes, and densities. For example, PM-10 is defined in 40 CFR 50 as consisting of particles 10 micrometers or less in aerodynamic diameter, meaning particles that behave aerodynamically like spherical particles of unit density (1 gram per cubic centimeter) having diameters of 10 micrometers or less.

Air dispersion model—computer program that incorporates a series of mathematical equations used to predict downwind concentrations in the ambient air resulting from emissions of a pollutant. Inputs to a dispersion model include the emission rate; characteristics of the emission release such as stack height, exhaust temperature, and flow rate; and atmospheric dispersion parameters such as wind speed and direction, air temperature, atmospheric stability, and height of the mixed layer.

Anthracite—the hardest type of coal, characteristically black in color, lustrous, with a conchoidal fracture (smoothly curved, irregular breakage surface). Anthracite coal consists of 92-98% carbon and less than 8% volatile constituents by weight.

Anticline—a geologic fold that is arch-like in form, with rock layers dipping outward from both sides of the axis, and older rocks in the core. The opposite of syncline.

Aquifer—a body of rock or sediment that is capable of transmitting groundwater and yielding usable quantities of water to wells or springs.

Artesian—groundwater conditions in which water in wells rises above its level in the aquifer, including conditions in which groundwater rises to the ground surface or above.

Ash—the mineral content of a product remaining after complete combustion.

Baghouse—an air pollution control device that filters particulate emissions, consisting of a bank of bags that function like the bag of a vacuum cleaner; the bags intercept particles that are mostly larger than 10 micrometers in aerodynamic diameter.

Beneficiation—the process of washing or otherwise cleaning coal to increase the energy content by reducing the ash content.

Biocide—a substance (e.g., chlorine) that is toxic or lethal to many organisms and is used to treat water.

Blowdown—the portion of steam or water removed from a boiler at regular intervals to prevent excessive accumulation of dissolved and suspended materials.

Bottom ash—combustion residue composed of large particles that settle to the bottom of a combustor from where they can be physically removed.

Building downwash—the downward movement of an elevated plume toward the area of low pressure created on the lee side of a structure in the wake around which the air flows.

Capacity factor—the percentage of energy output during a period of time compared to the energy that would have been produced if the equipment operated at its maximum power throughout the period.

Census tract—a small, relatively permanent statistical subdivision of a county.

Coal gasification—a process that converts coal into a gaseous product, which involves crushing coal into a powder and heating the powder in the presence of steam and oxygen. After impurities (e.g., sulfur) are removed, the gas can be used as a fuel or further processed and concentrated into a chemical or liquid fuel.

Combustor—equipment in which coal or other fuel is burned at high temperatures.

Cooling water—water that is heated as a result of being used to cool steam and condense it to water.

Culm—coal waste that consists of rock and coal with varying amounts of carbon material remaining after removal of higher-quality saleable coal.

Culm bank—a pile or other deposit of culm on the land surface.

Evapotranspiration—the amount of water removed from a land area by the combination of direct evaporation and plant transpiration.

Fault—a fracture or fracture zone in rock along which the sides have been displaced vertically or horizontally relative to one another.

Fischer-Tropsch (F-T) synthesis—a process that uses a metal-containing catalyst to convert a mixture of carbon monoxide and hydrogen (known as synthesis gas) into a mixture of carbon dioxide, water, and aliphatic compounds (hydrocarbons lacking an arrangement of atoms in their molecular structure), which are used to produce liquid fuels.

Floodplain—the strip of relatively level land adjacent to a river channel that becomes covered with water if the river overflows its banks.

Flue gas—residual gases after combustion that are vented to the atmosphere through a flue or chimney.

Flux—a material (e.g., limestone) that is added to a substance to lower the melting temperature of the substance and promote fluidity.

Fly ash—combustion residue composed of fine particles (e.g., soot) that are entrained with the draft leaving the combustor.

Formation—the primary unit associated with formal geological mapping of an area. Formations possess distinctive geological features and can be combined into "groups" or subdivided into "members."

Gaussian—concentrations of pollutants downwind of a source are assumed to form a normal distribution (i.e., bell-shaped curve) from the centerline of the plume in the vertical and lateral directions.

Groundwater—water below the ground surface in a zone of saturation.

Hazardous waste—a category of waste regulated under the Resource Conservation and Recovery Act (RCRA). To be considered hazardous, a waste must be a solid waste under RCRA and must exhibit at least one of four characteristics described in 40 CFR 261.20 through 40 CFR 261.24 (i.e., ignitability, corrosivity, reactivity, or toxicity) or be specifically listed by the Environmental Protection Agency in 40 CFR 261.31 through 40 CFR 261.33.

Integrated gasification combined-cycle—a process that uses synthesis gas derived from coal to drive a gas combustion turbine and exhaust gas from the gas turbine to generate steam from water to drive a steam turbine.

Laydown area—material and equipment storage area during the construction phase of a project.

Leachate—solution or product obtained by leaching, in which a substance is dissolved by the action of a percolating liquid.

Liquefaction—the process of transforming a gas into a liquid.

Magnitude (of an earthquake)—a quantity that is characteristic of the total energy released by an earthquake. Magnitude is determined by taking the common logarithm of the largest ground motion recorded on a seismograph during the arrival of a seismic wave type and applying a standard correction factor for distance to the epicenter. A one-unit increase in magnitude (e.g., from magnitude 6 to magnitude 7) represents a 30-fold increase in the amount of energy released.

Maximum Contaminant Level Goal (MCLG)—the maximum concentration of a substance in drinking water at which there is no known or anticipated adverse effect on human health, and which allows an adequate margin of safety, as determined by the U.S. Environmental Protection Agency.

Petroleum coke—a high-sulfur, high-energy product having the appearance of coal, which is produced by oil refineries by heating and removing volatile organic compounds (VOCs) from the residue remaining after the refining process.

pH—a measure of the relative acidity or alkalinity of a solution, expressed on a scale from 0 to 14, with the neutral point at 7. Acid solutions have pH values lower than 7, and basic (i.e., alkaline) solutions have pH values higher than 7.

Plume (atmospheric)—a visible or measurable, elongated pattern of emissions spreading downwind from a source through the atmosphere.

Safe yield—the maximum quantity of water that can be withdrawn continuously from a surface water or groundwater source during a 50-year (or greater) drought without ultimate depletion of the source (considering intrusion of undesirable-quality water, interference with other existing water sources, downstream flow requirements, and other factors).

Secondary drinking water standards—non-enforceable federal guidelines regarding cosmetic effects (e.g., tooth or skin discoloration) or aesthetic effects (e.g., taste, odor, or color) of drinking water.

Selective catalytic reduction—a system to reduce NO_x emissions by injecting a reagent such as ammonia into exhaust gas to convert NO_x emissions to nitrogen gas and water via a chemical reduction reaction.

Slag—molten inorganic material collected at the bottom of a combustor and discharged into a water-filled compartment where it is quenched and removed as glassy particles resembling sand.

Sludge—a semi-solid residue containing a mixture of solid waste material and water from air or water treatment processes.

Slurry—a watery mixture or suspension of fine solids, not thick enough to consolidate as a sludge.

Specific yield—the volume of water released from storage in a unit area of an unconfined aquifer per unit decline in the water table. Values are dimensionless (corresponding, for example, to cubic feet of water per square foot of aquifer per foot of water table decline) and typically are between 0.01 and 0.3. In physical terms, the specific yield can be understood as the fraction of the aquifer volume that consists of drainable void space.

Spring—a location on the land surface or the bed of a surface water body where groundwater emerges from rock or soil without artificial assistance.

Syncline—a geologic fold in which the rock layers dip inward from both sides toward the axis, with younger rocks in the core. The opposite of anticline.

Synthesis gas—a mixture of gases produced as feedstock, especially as a fuel produced by controlled combustion of coal in the presence of water vapor.

Tailings pond—an outside water-filled enclosure that receives discharges of wastewater containing solid residues from processing of minerals. The solid residues settle due to gravity and separate from the water.

Wetlands—areas that are inundated by surface water or groundwater with a frequency sufficient to support, under normal circumstances, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflow areas, mudflats, and natural ponds.